REPORT ON

MANITOBA SYMPOSIUM ON HAZARDOUS AND SPECIAL WASTES

MARCH 16, 17 and 18, 1983
WINNIPEG, MANITOBA

REPORT ON THE MANITOBA SYMPOSIUM ON HAZARDOUS AND SPECIAL WASTES

Volume 1

TABLE OF CONTENTS

		PAGE
Acknowledgements		iii
1.0	Layperson Summary	1
2.0	Terms of Reference	3
3.0	Symposium Organization	5
4.0	Symposium Synopsis	9
4.1	Summary of Speakers' Remarks	11
4.2	Summary of Panel Discussion	19
4.3	Summary of Workshops	21
4.4	Symposium Evaluation	27
5.0	Steering Committee Conclusions and Recommendations	29

Appendices — Under seperate cover, Volume II

Notice to Reader

This is Volume I of a two-volume report to the Manitoba Minister of Environment, the Honourable Jay Cowan.

Volume II contains the detailed verbatum texts of the speakers' remarks as well as other appendices relevent to the Symposium.

1. Speakers' remarks.
2. Main issues expressed by speakers from floor.
3. Evaluation.
4. List of information kit contents.
5. Copy of newspaper ad.
6. Copy of brochure.
7. Text of Minister's Closing address.

Anyone wishing a copy of Volume II or loan of an audio or visual cassette of the actual Symposium should contact

MANITOBA ENVIRONMENT
Community Relations Branch
960 - 330 St. Mary Avenue
Winnipeg, Manitoba
R3C 3Z5
Telephone: (204) 944-5763

ACKNOWLEDGEMENTS

The Chairman of the Steering Committee for the Manitoba Symposium on Hazardous and Special Wastes would like to thank the following people and organizations for their support and active participation in the organizing of this special symposium:

Members of the Symposium Steering Committee

Dr. Hymie Gesser
Manitoba Government-University Liaison Program

Harold Unger
Manitoba Association of Urban Municipalities

Dennis Muldrew
Manitoba Naturalists' Society

William Halpenny
Manitoba Chambers of Commerce

Al Cerilli
Manitoba Federation of Labour

Councillor Jae Eadie
Manitoba Association of Urban Municipalities

Jim Knight
Union of Manitoba Municipalities

Speakers

Honourable Muriel Smith
Manitoba Minister of Economic Development

Dr. Samuel Epstein
Professor of Occupational Health
University of Illinois

Dr. William J. Nicholson
Mount Sinai School of Medicine
New York

Dr. W.G. Bowen, Assistant Deputy Minister
Manitoba Environment Department

Dr. Donald Chant, Chairman
Ontario Waste Management Corporation

Mr. Ken Simpson, Head
Waste Management Branch
Alberta Environment

Mr. John S. Richardson, President
Chem Security Ltd.

Mr. Axel Szelinski, L.L.B.
Federal Environmental Agency
Berlin, West Germany

Honourable Jay Cowan
Manitoba Minister of Environment

Workshop Coordinators

Mr. Pat Feschuk
Government Refuse Collection and Disposal Association

Mr. Vic Stechison, Transportation Consultant
Winnipeg Chambers of Commerce

Dr. Frank Labella
Department of Pharmacology
University of Manitoba

Mr. Dave Young, Consultant
Hildebrandt-Young and Associates

Dr. Bill Turnock, Entomologist

Mr Doug Keil, P. Eng.
Underwood McLellan Ltd.

Dr. Barry Webster
Soil Science
University of Manitoba

Mr. Kenneth Emberly
Manitoba Environmental Council

Representatives of the Province of Manitoba

Mark Stefanson, Director
Community Relations Branch
Manitoba Environment Department

Edwin Yee
Hazardous Waste Coordinator
Manitoba Environment Department

Laurie Streich, Information Officer
Community Relations Branch
Manitoba Environment Department

Margaret McKee
Administrative Secretary
Community Relations Branch
Manitoba Environment Department

Carl Orcutt, Director
Environmental Control Services
Environmental Management Division
Manitoba Environment Department

Grant McLeod, Director
Environmental Management Services
Environmental Management Division
Manitoba Environment Department

Dick Stephens, Chief
Programs and Legislation
Environmental Management Division
Manitoba Environment Department

Resource

Mike Van Den Bosch
Water Pollution
Environmental Management Division

Don Burdeny, Provincial Coordinator
Transportation of Dangerous Goods
Manitoba Department of Highways and Transportation

Dave Wotton, Head
Terrestrial Standards and Studies
Environmental Management Division

Larry Strachan, Chief
Environmental Control Programs
Environmental Management Division

W. Grieve, Chief
W.M. Ward Technical Services Laboratory
Manitoba Environment Department

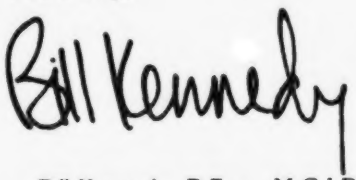
Cliff Lee
Solid Waste Management
Environmental Management Division

Dennis Brown, Head
Water Standards and Studies
Environmental Management Division

Dave Ediger
Environmental Accidents
Environmental Management Division

Thank you for your support in organizing the Manitoba Symposium on Hazardous and Special Wastes and for your continuing interest and concern in working toward a solution to this complicated problem.

Yours truly,



Bill Kennedy, P.Eng., M.C.I.P.
- Symposium Steering Committee Chairman
- Chairman of the Manitoba Environmental Council
- Employee of Damas & Smith Ltd.

1.0
Layperson Summary

1.0 Layperson Summary

This is a report on the Manitoba Symposium on Hazardous and Special Wastes, its organization and its findings. The Symposium was held in the Winnipeg Convention Centre on March 16 to 18, 1983. Its purposes were twofold: to foster public awareness; and, to enhance appreciation for the complex problems associated with hazardous wastes, not only in our home Province of Manitoba, but also in other jurisdictions.

At the request of the Manitoba Minister of Environment, the Honourable Jay Cowan, the Symposium was organized by an eight-member Steering Committee made up of non-government organizations representing environment, labour, local government, university and business interest groups.

The Steering Committee, supported by resources from the Government of Manitoba, worked very hard together to coordinate a top rate selection of speakers and to structure workshop sessions allowing participants to contribute freely to addressing hazardous waste issues. Organizational tasks in preparation for the symposium were completed over a ten-week period from the first of January, 1983 to the middle of March, 1983.

Speakers from the United States were featured in the first morning session of the Symposium. Dr. Epstein, of Chicago, discussed the crisis in America which began with the Love Canal disaster and represents only the tip of the iceberg. Dr. Nicholson of Mount Sinai spoke about the long-term health effects, particularly cancer, which can be connected to exposure from hazardous wastes in the factories and near the dump sites.

Dr. Bowen, of Manitoba, discussed the Manitoba situation and the importance of doing something well in advance of any crisis situation. He outlined the Government of Manitoba's three-phase program of reducing, recycling, reclaiming (the 3 R's), and disposing of Manitoba's hazardous and special wastes. Mr. Simpson, of Alberta, highlighted the Alberta experience in site selection for a hazardous waste facility, while Dr. Chant reviewed the Ontario experience on the same matter. Both stressed the importance of public participation and the need for full disclosure of government information.

Mr. Richardson, of Chem-Security Ltd., of Vancouver, provided a private sector point of view in describing the design, building, and operation of a hazardous waste management facility. Drawing upon experience gained from an operating Oregon, USA facility, Mr. Richardson described proposals for a new Alberta facility. Mr. Szelinski of West Germany discussed the European situation and characterized their experience of having seen a rapid development in waste management coming on the heels of growing public awareness and concern.

Workshop sessions on Thursday, March 17 and 18, 1983 provided the main focus for public input and opinion regarding the Government of Manitoba's hazardous waste program. Eleven workshops were held, each with their own coordinator and resource person. Workshop themes were organized around the hazardous waste issues of: facility siting; transportation access and safety; long-term safety and monitoring; public participation; recycling and reclaiming; public or private ownership; alternate technologies; why hazardous wastes at all?; secure landfilling; legislation/regulation/enforcement; and, low level radioactive waste.

These issues were discussed at length and lead to the development of several specific and detailed recommendations on how the Manitoba Government should proceed in several areas.

Finally, after the Symposium was over, the Steering Committee came together and agreed upon several general recommendations about hazardous waste management. Recommendations to the Minister of Environment, the Honourable Jay Cowan, included the following:

- Recommendations favoring more detailed study of the existing hazardous waste problem, more public participation in decision-making and full disclosure of government information.
- Recommendations concerning legislation changes, the need for immediate action in developing interim storage facilities.
- Recommendations concerning the formation of a hazardous waste crown corporation, a public advisory board and satellite organizations such as a centre for epidemiology and toxicology and a centre for advance technology in hazardous waste treatment.

2.0
Terms of Reference

2.0 Terms of Reference

2.1 Background

The safe disposal of hazardous wastes is a problem that has become increasingly more important over the past few years Various reports on the Manitoba situation estimate the total annual tonnage to be anywhere between 20,000 and 45,000 tonnes of hazardous waste. Ninety per cent is generated in Winnipeg, the city which contains just over half of the total Manitoba population. Hazardous wastes take the form of used oils, sludges from paint manufacturing, heavy metal wastes from the plating industry, used solvents, PCBs, pesticides, and others. Only a small proportion of these wastes are disposed of in a secure and safe manner. The rest are simply discarded in areas where they would pose future environmental and public health problems. Some other wastes are poured into the City of Winnipeg and other municipalities' sewer systems and find their way into rivers, streams and lakes. Some hazardous wastes are disposed of in many of the 450 registered land disposal sites across the province, all having a very limited ability to handle hazardous wastes stored until the proper disposal methods can be found. The time is ripe for action now. However, hazardous waste is a very complicated problem. Nevertheless, it must be dealt with immediately if we are to prevent untold problems for future generations.

Solving the problem of hazardous waste has proven to be a difficult task in many jurisdictions. Many times, throughout North America, proposed waste treatment facilities have been blocked because of public opposition. Opposition usually occurs as a result of lack of information from government and industry about the facility and its operation.

The Manitoba Symposium on Hazardous and Special Wastes is a first step in the right direction to avoid these problems in our province. An open and frank discussion about our hazardous wastes is the only effective way to educate the public and establish public confidence in dealing with the problem. When Environment Minister Jay Cowan revealed a three-phase Hazardous and Special Waste Management Program for Manitoba, a major public symposium on hazardous and toxic wastes was an important component of the first phase.

Other components of Phase One include the hiring of a special coordinator within Environmental Management to manage the hazardous and special wastes program; the holding of public hearings across the province to recommend on the matter of criteria for site selection and the type of facility required in Manitoba; the enactment of hazardous materials legislation; and the development of a public information and awareness program. The second phase of the Hazardous and Special Waste Management Program will involve a formal site selection process while the actual construction of the facility will not take place until the third and final phase. The three phases of the program are expected to take place over a three to four-year period. The Minister has also indicated that public participation will be an integral component of each step of the program.

2.2 Terms of Reference

The public symposium, on which this document reports, was sponsored by the Manitoba Government and was organized by an eight-member non-government steering committee. The Manitoba Government provided the following terms of reference to the Hazardous Waste Steering Committee to facilitate planning and organizing a symposium.

1. To plan, organize and conduct a symposium on hazardous and special wastes to meet the following objectives:

   To foster increased public awareness and appreciation about the problems associated with hazardous and special wastes;

   To utilize the symposium as an effective mechanism by which to publicly critique the province's hazardous and special waste management program;

   To facilitate public input into Manitoba's hazardous and special waste management program;

   To ensure the symposium is conducted at a lay-person level.

2. To provide the Minister with a report after the symposium. The report should include an overall summary, general comments on the conclusions emanating from the symposium, identification of "common ground" and other recommendations deemed appropriate.

Overall, it was the intent of the government to have the symposium organized, presented, and reported on by non-government organizations, municipal organizations and the general public. The main purpose was to maximize public participation with a program that was designed for public understanding and public education.

3.0
Symposium Organization

3.0
Symposium Organization

3.1 Steering Committee Selection

Selection of the Steering Committee began with the request by the Minister of Environment on December 10, 1982 that Mr. Bill Kennedy of the Manitoba Environmental Council be chairman of the upcoming symposium on hazardous and special wastes. Concurrently, letters were sent to seven other Manitoba-based organizations with a request that they name a representative to work on a steering committee to organize the symposium. Representatives were selected and agreed to participate between Christmas and New Years. The first formal meeting of the Steering Committee was held on January 3, 1983. At that time it was agreed that a symposium tentatively scheduled for March 16 - 18, 1983 was a target that was achievable with a good deal of eager cooperation. The following people and organizations participated to form the Symposium Steering Committee.

- Mr. Bill Kennedy, Chairman, Manitoba Environmental Council;
- Dr. Hymie Gesser, Manitoba Government-University Liaison Program;
- Mr. Al Cerilli, Manitoba Federation of Labour;
- Mr. Bill Halpenny, Manitoba Chambers of Commerce;
- Harold Unger, Manitoba Association of Urban Municipalities;
- Mr. Jim Knight, Union of Manitoba Municipalities;
- Mr. Dennis Muldrew, Manitoba Naturalists' Society; and,
- Mr. Jae Eadie, Manitoba Association of Urban Municipalities.

A tentative format for the symposium proposed by the Government of Manitoba foresaw a two and one-half day session divided up as follows:

- Day One, which would include presentation by speakers;
- Day Two, which would include workshops on various facets of the hazardous waste problem; and,
- Day Three which would include a symposium wrap-up.

The initial Steering Committee meeting confirmed this format as a working model and agreed that first priority should be given to the selection of a speakers list. Because of the time constraints apparent over a ten-week period of preparation, it became necessary to confirm speakers with all possible haste. At the same time, an effort was made not to compromise on the calibre of speakers as it was recognized they would play a key role in public education and also in promotional efforts for the symposium. Three officials from government levels were instrumental in working with the chairman in developing an initial speakers list and offering comments on appropriate topics: Mr. Pat Feschuk of the City of Winnipeg; Dr. W.G. Bowen of the Manitoba Environmental Management Division; and Mr. Ken Childs, formerly of the Waste Management Branch of the Department of Environment, Ottawa. In Steering Committee meetings it was determined that speakers' presentations should generally fulfill the following objectives:

> An outline of experience in other jurisdictions including Canada, the United States and Europe;
>
> A review of the long-term health effects that could be caused in human populations if a hazardous waste problem was ignored;
>
> The Manitoba situation with a view to protecting the environment and public health over the long-term.

Fortuitously, all of the speakers initially approached were interested in attending and confirmed their presence with exception of one. Dr. Bernd Wolbeck of the Waste Management Division, Ministry of the Interior, Bonn, West Germany indicated uncertainty about his attendance because of the upcoming elections in West Germany. In any case, he promised to send a representative regardless of whether he could come himself. His promise was kept. Chapter 4.1 provides a summary of the speakers and their presentations. In short, they represented a broad cross-section of opinion about the resolution of the hazardous waste problem and a breadth of experience from Canada to the United States and Europe. There was a single thread in all of their discussions. It was the importance of public awareness, public education, and public participation in the whole process of identifying problems and solutions for hazardous wastes.

The next task of the Steering Committee was to plan a detailed agenda for the symposium in order that a calendar could be printed and further details of the symposium could be worked out. Excellent participation was received from Steering Committee members on all facets of the planning and organization. Themes for the various workshops were devised in a committee forum. It was decided that each workshop should have a chairperson selected from outside the Government of Manitoba system. The workshop chairmen were seen as facilitators of discussion as well as reporters of discussion. It was further decided that each workshop should be provided with a resource person from the Government of Manitoba who would act as advisor within a particular area of expertise and who could also provide a recording function to assist the workshop coordinator and to provide documentation for later report writing.

Steering Committee members devised the idea of an information kit which would provide every registrant with a guide to the hazardous waste situation in Manitoba and provide the registrant with sufficient briefing material to follow the speakers presentations and the workshops which followed. Each information kit contained the following material: available summaries of speakers' presentations; a glossary of hazardous waste terms; a pad and pen; a workshop manual which explained the purpose and focus of each workshop; and an evaluation questionnaire.

While two committee members developed the content of the information kit, two others surveyed the available facilities at the Winnipeg Convention Centre and made arrangements for rooms, chairs, audio/visual equipment and so on. Considerable assistance to committee members was provided by both Mr. Mark Stefanson and Mr. Edwin Yee of the Manitoba Environment Department.

In summary, members of the Steering Committee met on eleven separate occasions both before and after the Symposium. The total amount of time of volunteer work donated by these members was estimated at 350 person-hours.

3.3 Publicity

A considerable portion of the symposium budget was spent on publicity on the basis of an information plan approved by the Steering Committee. Complementing press releases made by the Honourable Jay Cowan, the Steering Committee Chairman drafted a letter of invitation to the symposium which was circulated throughout the memberships of the organizations represented on the Steering Committee. In total, some 7000 invitations were forwarded by mail. Following this, 10,000 copies of the symposium calendar were printed and forwarded by hand and through the mail over similar channels. Newspaper advertisements were run approximately two weeks in advance of the symposium in the Winnipeg Free Press, Winnipeg Sun, Brandon Sun, The Manitoba Cooperator and in northern newspapers such as the Opasquia Times, the Flin Flon Reminder and the Thompson Citizen.

In an effort to further publicize the symposium, various Steering Committee members participated in interviews on radio and television talk shows. In addition, Videon Cable-TV was invited to cover the complete two and one-half day symposium. They later ran the complete proceedings on Saturday, March 26 and Saturday, April 2, 1983.

3.4 The Symposium

All symposium events proceeded rather smoothly. All of the speakers showed up and the majority of the presentations were informative, lively and inviting of numerous questions from the floor. In total, 345 people attended the Wednesday, March 16 speakers' session. Including the opening address by the Deputy-Premier Muriel Smith, there were a total of eight speakers. Commencing shortly after 9:00 a.m., the Wednesday session ran until 5:45 p.m. with most of the attendees staying to the end. In short, it was a very informative but very tiring day for everybody involved, speakers and audience alike.

The major focus of the second day of the symposium was the holding of various workshops on the following topics: Siting of a hazardous waste facility; Transportation; Long-term Safety and Monitoring; Public Participation; Recycling/Reclaiming; Ownership; Alternate Technologies; Why Hazardous Waste At All?; Secure Landfilling; Legislation/Regulation/Enforcement; and Radioactive Wastes.

An estimated total of 214 people participated in the workshop sessions. Representation of persons registered at the Symposium was split about 65% public sector and 35% private sector as outlined in more detail below:

Public Sector

	%
Government of Canada (including Environment, Agriculture and National Defence)	8
AECL	1
Government of Manitoba (including Environment, Highways, Natural Resources, Municipal Affairs)	20
Clean Environment Commission	3
Universities	8
Other provinces and waste management groups from USA	
Municipal a) City of Winnipeg	12
b) Rural	12
Subtotal (Public)	65

Private Sector

Business and Industry	16
Labour and Unions	8
Manitoba Environmental Council	4
Other environmental interest groups (Including Manitoba Nat .alists' Society, Sierra Club, Greenpeace)	2
Other and no affiliation given	5
Subtotal (Private)	35
TOTAL	100

Workshop coordinators were chosen for their abilities to work with people. For the most part, they were not experts in hazardous waste, nor were they experts in their particular workshop subject. Nevertheless, they were skilled at facilitating and coordinating discussion with a view to obtaining consensus. Further details on the workshop deliberation can be found in section 4.3. As a demonstration of their interest in the symposium itself, three of the Steering Committee members also acted as workshop coordinators.

A panel discussion was also held on Thursday, March 17 in order to provide a break from the intensity of the workshop sessions. The topic debated by panelists was "Should the government involve public participation in all facets of the hazardous waste program, or should the government simply make a unilateral decision on the basis of the best technical information available?" The panel discussion was a useful mechanism for eliciting questions from the audience and sparking questions and discussion. It also provided a useful release valve for two or three attendees to get their special concerns out into the open.

The Friday wrap-up session on May 18, 1983 ran relatively smoothly but going slightly overtime. Workshop coordinators reported on the deliberations and consensus found in each of their respective groups. For the most part, the reports were detailed and represented an in-depth treatment of their particular topic area. The Minister responsible for Environmental Management, the Honourable Jay Cowan, closed the symposium with a moving speech about the important need to take action on this very complex matter and the value of public participation as a basis for government action.

A special note should be made about the low level radioactive waste issue. On Day One of the symposium, it became evident that there were several attendees with a special interest in radioactive wastes. The symposium agenda did not contemplate discussion of this issue, insofar as it was being addressed under another government program. However, rather than lose the present apparent interest in the subject, it was decided by the Chairman that a special new workshop on the subject of low level radioactive wastes could be created with appropriate facilities and support. Recommendations from this special workshop are also found in section 4.3.

3.5 The Report

With the completion of the symposium, it became incumbent upon the Steering Committee to draft and publish a report to the Minister of Environment, which described the findings of the symposium, its recommendations and conclusions. To facilitate this, a three-person sub-committee was struck to develop the initial drafts of the report for the attention of the committee as a whole. The committee then edited the draft report, reviewed the recommendations and conclusions, and developed overall Steering Committee recommendations for consideration by the Minister. When this report is published it will be forwarded to all registrants in addition to libraries across the province.

4.0
Symposium Synopsis

4.1
Summary of Speakers' Remarks

Notice to Reader

Please be advised that this section of the report is a summarized and condensed version of the Symposium speakers' remarks.

Verbatim texts can be obtained by writing:

MANITOBA ENVIRONMENT
Community Relations Branch
960 - 330 St. Mary Avenue
Winnipeg, Manitoba R3C 3Z5
Telephone: (204) 944-5763

A View to the Future

Dr. Samuel S. Epstein, M.D.
Professor of Occupational Health
University of Illinois

Dr. Epstein explained how the problems of hazardous waste disposal and the hazards of hazardous wastes reached a crisis in the U.S.A. culminating with the Love Canal.

The quantity of hazardous wastes generated in the U.S.A. is 85 billion pounds/annum or 350 pounds per capita/year. In 1980, over 90 per cent of this was, according to E.P.A., disposed of improperly, unsafely or illegally. EPA has further estimated that 50,000 hazardous waste sites exist in the United States, of which most have not been characterized for their content, safety or environmental impact. There are also 170,000 industrial impoundments which consist of ponds, pits or lagoons into which industry has dumped liquid wastes and sludges for decades. It is estimated that one per cent of the ground water in the United States is contaminated from hazardous wastes which have been improperly stored. There is also increasing evidence of excess cancer rates for residents living near areas such as hazardous waste dumps. The cleanup of these sites could cost from 4 million to 30 million dollars a site. Therefore, 10,000 sites could cost 300 billion dollars. Thus, although it may be expensive to regulate the disposal of hazardous waste, it is even more expensive not to regulate.

Dr. Epstein then stated that although laws are essential, they are not enough. The rigorous implementation of the law is required if a healthy society is the goal.

One should not rely on government; a grass roots leverage should be provided by a concerned public to monitor and implement the appropriate legislation.

Dr. Epstein said safe hazardous waste management includes cleaning up the present sites, which include landfills, municipal landfills, secure landfills and other dumps or industrial impoundments. The location and composition of all sites should be public information. The right to know is synonymous with safe disposal of hazardous waste. Comprehensive monitoring of air and ground water is essential. The burden of proof should be with the polluter not the potential victim.

Industry should be taxed to build up a Super Fund to compensate victims of spills, accidents or improperly handled hazardous wastes.

Present hazardous wastes should not be placed in a secure landfill because there is no such thing as a "secure" landfill. Alternate technology should be used consisting of high temperature incineration, pretreatment recycling and interim storage (or a retrievable storage and service facility). The manifest system of following the waste from origin to disposal (cradle to grave) is absolutely critical. Only by taxing secure landfill disposal will industry reduce the amount of waste to be disposed of.

Dr. Epstein expressed his opinion that certain chemicals are too toxic and dangerous to use and because their care and disposal is very expensive, these substances should not be used and alternates should be made available. A user tax would help implement such a program.

And finally, Dr. Epstein concluded by saying, don't rely on the experts, — educate and inform yourselves — learn from the American experience before giving your consent.

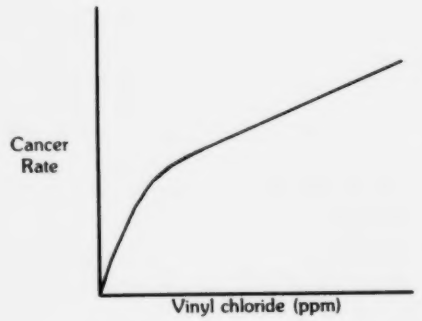
Hazardous Waste and Potential Health Effects

Dr. William J. Nicholson
Associate Professor Community Medicine
Associate Director of Environmental Science Lab
Mount Sinai School of Medicine
New York

Dr. Nicholson said there are over 250,000 dumps in the USA. Of these, about 50,000 are potentially hazardous. The cost of remedial action (taken in just over 150 sites) is in the millions of dollars for each site. Hence prevention and care is essential.

The major public concern is cancer and the carcinogenic nature of the hazardous wastes. Though at present 200 compounds have been shown to cause cancer in animals, only about 30 have been shown to be carcinogenic in humans. Also it may take years before the effects become apparent. The death rate on exposure to carcinogens is proportional to the fifth power of the age. Also there is a synergetic effect between agents such as asbestos and cigarette smoking, i.e. the effect is not additive but the two combine in a multiplicative way. A similar effect is present between vinyl chloride and alcohol. The question is what would man be exposed to from toxic waste facilities and how do these materials interact with outside exposure, and if there is an effect how long will it take before it is noticed?

Dr. Nicholson said the linear dose response relationship is not always followed and as in the case of vinyl chloride low levels of exposure lead to high cancer rates.



In a general population there are individual groups (such as children) that are particularly sensitive to certain substances and allowance and care must be taken to accommodate them. It is impossible to make a valid risk estimate of exposures to known concentrations from a hazardous waste site. For the best studied substance, asbestos, the risk estimate is ± a factor of 30 or to within a factor of about 1000.

Hence we must act with prudence and resolve any doubts in favour of public health.

The Manitoba Problem and the Future

Dr. W. George Bowen
Assistant Deputy Minister
Manitoba Environment

Dr. Bowen stated that we are all generators of hazardous wastes and therefore we must all be part of the solution whereby the potential dangers to human health are eliminated.

He said wastes are any substances for which the owner or generator has no further use. Hazardous wastes are those wastes which due to their nature and quantity are potentially hazardous to human health and the environment and which require special disposal techniques.

Since it is impossible to remove some of these wastes completely, Dr. Bowen said we must be able to evaluate the risks and to determine what is acceptable and public participation is required. We intend to take full advantages of the past experience of the United States.

Four basic questions must be answered.

1. Can the waste be eliminated at its source?
2. Can it be recycled by the generator or by another party?
3. If hazardous, can it be converted into a non-hazardous form?
4. If it must be disposed of, how can it be most effectively and efficiently processed?

Dr. Bowen said there are at present 760 waste disposal sites in the province of which 530 are active and 194 require further investigation — 20 in even greater depth.

He said Manitoba is embarking on a three phase program.

1st Phase: To introduce legislation and the appointment of a Hazardous Waste Coordinator and a Steering Committee to organize and report on this symposium. A manifest system will be instituted to look after hazardous waste.

2nd Phase: Detailed site selection and identification.

3rd Phase: Construction of treatment and disposal facility and implementation of Hazardous Waste Management System. The public will be involved at each stage.

The Ontario Experience

Dr. Donald A. Chant, B.A., M.A., Ph.D., L.L.D.
Chairman
Ontario Waste Management Corporation

Dr. Chant said that, in 1978, the Ontario Government established a Crown Corporation — the Ontario Waste Management Corporation (OWMC) to take on the responsibility of handling the 1.5 million tonnes/year of liquid industrial toxic wastes. Of this, 50 to 60 per cent is receiving some form of treatment. The remainder is being dumped into sewer systems or landfills. Dr. Chant stated that Ontario has at present about 800 abandoned dumps, some of which may present problems in the future. Hence when it was obvious that a site could not be agreed to since starting the search in 1976, the government unilaterally and without public input or debate in 1980, selected South Cayuga as the location for their waste management facility to be built and managed by OWMC.

Dr. Chant stated that public opposition and hydrological studies contritubed to the rejection of the site and though the OWMC is exempt from the province's Environmental Assessment Act it henceforward will operate as if it were subject to the act.

He said the OWMC had to start all over again and a multiphase approach was initiated to select a new site and plan a modern efficient facility.

Phase one consisted of the collection and analysis of information concerning waste types, quantities, source and location, available treatment technologies and the hydrology and soil condition of Southern Ontario. This phase ended in September, 1982.

Phase two — the search for a site was narrowed down to the golden triangle (Oshawa to St. Catherine). About 70 per cent of all Ontario waste is generated here and the community which benefits from the industrial development and employment should contribute to the solution of the waste generated — i.e. only social justice. Also transportation costs and risks would be reduced.

Phase three — present status which includes the need to identify specific sites for more detailed study.

The technology to be used is complex and consists of:

1. Physical-chemical treatment.
2. Rotary kiln for combustion.
3. Engineered landfill site for burial.

He said by April 1983 several candidate areas and sites will be announced and hydrology and soil studies will be made as well as access to major sewer systems

examined for unused capacity. An analysis of the air should also be made. By August 1983 a few possible sites will be listed in order of preference. A full environmental impact study will be made and it will take a year to confirm priorization of sites.

Dr. Chant said because of the complexity of the problem and the difficulty in reaching valid decisions it is essential that public interest groups be given financial assistance so that they can acquire independent expert advise.

Dr. Chant said although everyone agrees that hazardous wastes exist and must be resolved, there is no agreement as to the solution. However openness and public debate and acceptance are essential. The selection of a site must be a credible one the public understands and can have input **before** major decisions are made. The key policies of the OWMC are:

1. Start small — build for 150,000 tonnes/year. (This is still the largest site in the world).
2. Provide full service by the best technology.
3. Environmental factors must be best as a second line of defense. (Deep clay - Air shed)
4. Only treated waste will enter landfill.
5. Reduce, Recycle and Reclaim will be encouraged.
6. OWMC will work with private sector.
7. Charge for service - try to break even.
8. Regulation and policing will be necessary.
9. OWMC will act as though it were not exempt from the Environment Assessment Act.
10. Doing it right from the start will eventually save time and money in the long run.

Dr. Chant stated that we must all share in the solution since we all share in the generation of the waste.

The Alberta Approach to Hazardous Waste Management

Mr. Ken J. Simpson, M.Sc., p. Eng.
Head, Waste Management Branch
Alberta Department of the Environment

At present Alberta's 100,000 tonnes/year of industrial and hazardous wastes are dumped into surface waters, sewage systems and landfills. The Hazardous Waste Management Committee has studied the problem and has submitted its report and recommendations. The basic policy objective was to ensure continuing good human health and environmental quality. Legislation has been passed (The Hazardous Chemicals Amendment Act) incorporating a compulsory Manifest system as well as transportation codes and special waste management and Clean Air and Water guidelines.

Site selection for a facility has involved public seminars and workshops throughout the province. Three areas have been selected for detailed evaluation and an integrated treatment and storage facility is on its way to being established.

Full and open information with public involvement has led to the ultimate success of the process.

Designing a Special Waste Waste Management Facility

Mr. John S. Richardson
President - Chem-Security Ltd. (CSL)
Vancouver, B.C.

Mr. Richardson said Chem-Security Ltd. (CSL) has been appointed to build the Alberta Special Waste Management Facility. A tentative plan of a typical site is attached. It is planned to reduce the amount of hazardous waste by four different means.

1. On-site (generator) treatment by addition of extra process steps, which is usually more economically viable for larger industries.
2. Increased process efficiencies.
3. Waste recycling or reclamination, such as for waste oil or solvents.
4. Alternative disposal practice — larger generators may build own landfill, incinerator or deep well, etc.

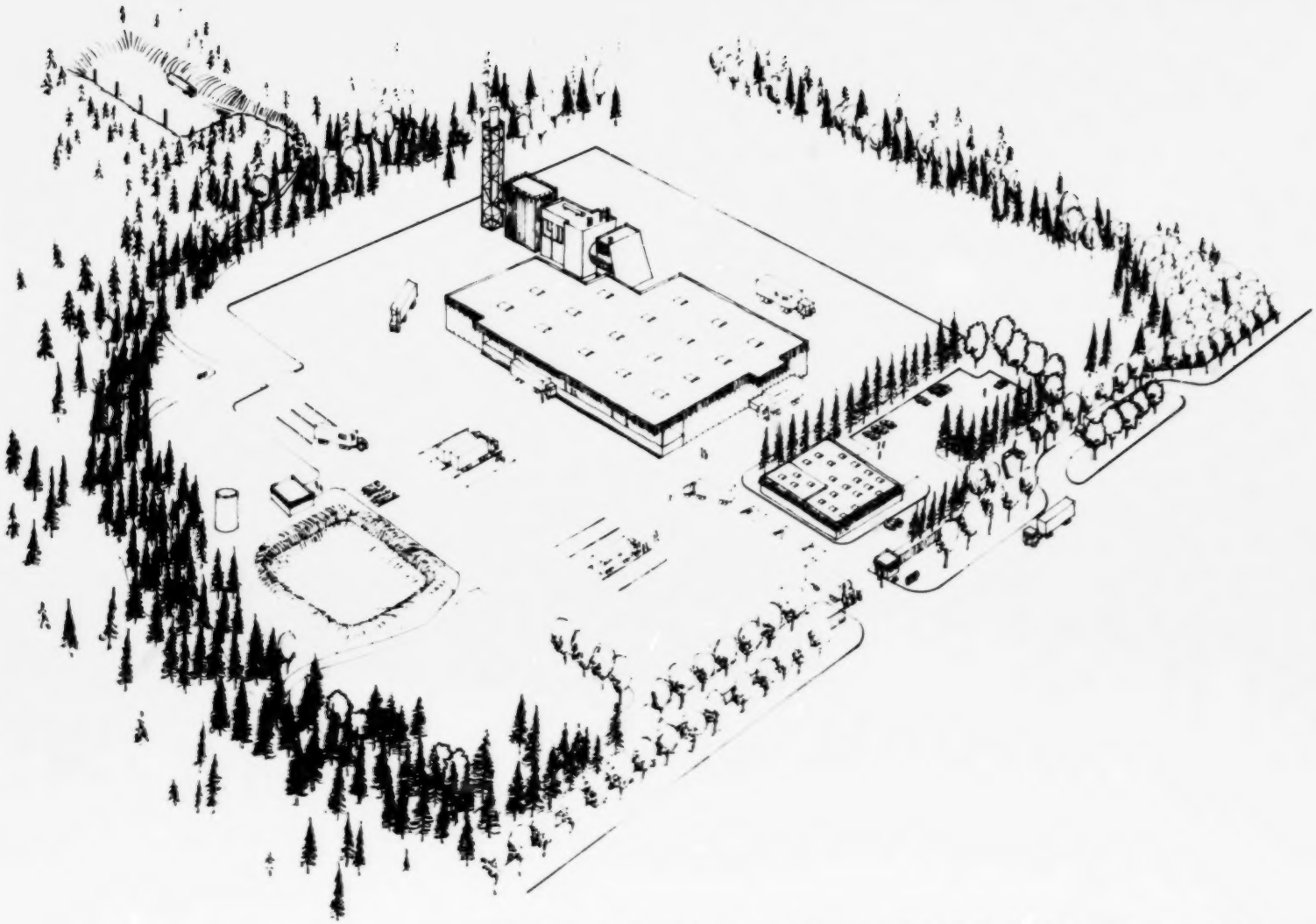
In general about 52 per cent of the waste can be incinerated, 30 per cent physical-chemical treatment and only 18 per cent requires fixation and landfill with the respective approximate costs being $250-330, $160-220 and $90-130 per tonne.

It is recommended that for any site the following criterion is used as a guide:

1. Build small — it is easy to add on
2. Build flexible — easy to modify or expand
3. Build modular— standardization reduces costs
4. Review options

The major component of the site shown in Fig 1 include — Reception area, laboratory waste reception, storage and mixing tanks, incinerator, solvent recovery, landfill trenches, deepwells, truck wash facilities, buffer zone.

Mr. Richardson said the secure landfill site at Arlington, Oregon, which has been operated by CSL for a few years, serves as a Model System.



ALBERTA SPECIAL WASTE MANAGEMENT FACILITY

PRELIMINARY PERSPECTIVE

CHEM-SECURITY LTD.

The European Experience

A. Szelinski, L.L.B.
Federal Environmental Agency
Berlin, West Germany

Mr. Szelinski stated that during the last ten years hazardous waste management has seen a rapid development in most western European countries as a result of growing public awareness of the risks involved in improper management and of strong government involvement.

He said, apart from legislation in individual countries, the European Economic Community and other international organizations have played an active role in promoting hazardous waste management schemes. In 1978, the EEC issued a "Directive on Toxic and Other Hazardous Wastes" which includes supplement provisions to the EEC Directive on Waste of 1975. Thus, in the member states uniform principles apply.

Mr. Szelinski said the EEC directives can however, only be regarded as a platform for individual members states' legislation. They did not produce uniform management patterns nor uniform management principles.

Still, most states have enacted:

- hazardous waste lists and definitions;
- planning principles;
- licensing patterns for waste disposal facilities; and
- control legislation, including trip-ticket procedures for hazardous waste transportation.

He stated that in addition to legislation, the establishment of hazardous waste disposal facilities has made substantial progress. There are, however, still important differences in European countries with regard to "hazardous waste management philosophy" as

- containment versus dilution;
- free market approach versus public order approach;
- public versus private investment.

Mr. Szelinski said when planning a hazardous waste disposal system it has to be borne in mind that waste tends to follow the lowest available disposal costs (including costs for transportation). Administrative and/or legislative measures have to be taken to assure environmentally sound disposal and control of hazardous waste streams.

4.2
Summary of Panel Discussion

Summary of Panel Discussion

Topic

Public Participation in the Manitoba Hazardous and Special Waste Program

Panel Members

- William Kennedy, Steering Committee Chairman and Chairman of the Manitoba Environmental Council
- Dr. William Turnock
- A. Szelinski, L.L.B., Federal Environmental Agency, Berlin, West Germany
- J.S. Richardson, President, Chem-Security Ltd., Vancouver, B.C.

There was unanimous support by panel participants and the audience at large that public participation and involvement are essential to Manitoba's Hazardous and Special Waste Management Program.

Dr. William Turnock stated that the provincial government will only be able to gain support for its hazardous waste program if it incorporates meaningful public involvement. He suggested that public involvement is necessary in a number of stages. Number one, determining criteria for site selection; number two, evaluating the technically feasible sites; and number three, public involvement is necessary to monitor any facility once it is operational. Dr. Turnock emphasized that while public participation is important to the decision-making process, it will be the elected representatives who will be charged with the responsibility of making the final decision on the site(s). He said that although public participation may result in the program taking a little longer, he said that "it's better to do it right than to do it quickly".

Axel Szelinski stated that everyone would agree that public participation is necessary; however, he said the most important question is to define what kind of public involvement. He suggested that this symposium was a good example of effective public participation in action. Mr. Szelinski said public participation does not just involve providing information. It means giving the general public an opportunity to play a role in the decision-making process. He suggested that there should be two stages of public participation; number one, to participate in a determination of the necessity of a system and facility; and, number two, to participate in the actual siting of a facility. Mr. Szelinski suggested that meaningful public involvement is actually democracy in action.

Mr. John Richardson pointed to the Alberta program as being a good example of effective public participation. He suggested that public involvement was necessary from beginning to end and the best means by which to get information to the public is through informal means. He suggested that there is no replacement for a one-on-one exchange of ideas on this important matter and that is why he recommends that program participants be as accessible as possible.

There was a general discussion initiated by a member of the audience on whether or not Manitoba really needs a hazardous waste facility. It was suggested that all alternatives must be explored, particularly recycling and reprocessing, before a facility should be constructed. Manitoba's Hazardous and Special Waste Management Coordinator, Mr. Edwin Yee, said the provincial government feels that a facility is necessary because Manitoba needs to deal with its own hazardous waste problem and should not be looking to ship it to other provinces. Mr. Yee stated that while Manitoba does not generate a significant amount of hazardous waste, the amount that we do generate must be treated in an environmentally safe manner. During the course of the general discussion, it was pointed out by Mr. Hal Lacey of the City of Winnipeg that the Reid/Crowther estimate of 45,000 tonnes had a number of major inconsistencies with an inventory carried out by the City of Winnipeg and the province. He suggested hazardous wastes, namely waste oils, are currently being recycled. He said at present there is a large market for waste oil in Winnipeg. Mr. Lacey said his only concern with Manitoba's plan is that it seems to be oriented toward construction of a large $10-20 million operation. He suggested that, based on Winnipeg's hazardous waste inventory, a small incinerator may be all that's necessary. (City of Winnipeg inventory indicated the following estimates of annual hazardous waste generation: 76 imperial tons of solids and 2,709,000 gallons of liquids).

There was some concern expressed about the lack of public participation regarding Atomic Energy of Canada's planned underground research lab near Lac du Bonnet. A number of the audience members participated in the discussion, including the local reeve of the R.M. of Lac du Bonnet, who suggested formal public hearings were necessary. Meanwhile, a public relations representative from AECL stated that there has been extensive public involvement to date in their program.

A representative from the Minnesota Waste Management Board closed off the panel discussion by reaffirming the importance of public participation in hazardous waste management. He suggested that an effective hazardous waste program should be able to answer "yes" to the following five questions:

- Is there an important problem?
- Is the right agency dealing with the problem?
- Is the decision-making process fair and open?
- Has that agency proven that they are listening to the public through proper feedback methods?
- Is the proposed solution, on the whole, better than doing nothing?

4.3
Summary of Workshops

Siting

Coordinator: Pat Feschuk, Government Refuse Collection and Disposal Association
Resource: Mike Van Den Bosch, Water Pollution, Manitoba Environment
Attendance: 23

The first topic discussed was Manitoba's requirement for a facility. Consensus for the necessity was reached for three reasons:

1. Problems with availability of present and future waste exportation;
2. A moral obligation to deal with our own wastes; and,
3. A selling point to aid the development of future industrial growth.

The problem envisioned with siting a facility was the formation of a site selection committee, six to eight individuals, only two being "experts" in the area and the balance representing various segments of the Manitoba population. This siting committee was then to establish site selection criteria including: access to transport, hydrogeologic, land use, generator-facility transport, emergency response, environmental protection, and local public acceptance.

The workshop felt that there should be no exception to any provincial or municipal legislation or regulation allowed for any hazardous waste facility.

There should be no time limit on the site selection process. It was also felt that due to the promised technology and the economic benefits, there would be no need for any mandatory siting legislation.

The siting workshop had three major proposals:

1. The site selection process should commence as soon as possible;
2. The site selection should be subject to all approval procedures; and,
3. The site selection committee should have available to it a technical data resource.

Transportation

Coordinator: Vic Stechison, Transportation Consultant, Wpg. Chambers of Commerce
Resource: Don Burdeny, Provincial Coordinator, Transport. of Dangerous Goods
Attendance: 25

This workshop felt that the selection of the transport type should lie with the generator who would best understand the hazards. They also felt that waste segregation and detailed documentation of the hazardous wastes would be required.

The workshop decided that in order to minimize the probability of an accident, transport should be limited to daytime and to weekdays if the transport was by truck. It was decided that it would be advisable to outline and utilize designated truck routes. The workshop felt that if hazards warranted, both trucks and segregated wastes should be placarded as to their toxicity.

The workshop participants did not feel that extensive driver training in emergency response would be required; however, that drivers should understand the placards and have a general understanding of emergency response procedures.

The workshop felt that the transport companies should be licensed, however, it was not possible to reach consensus on the necessity of licensing of the drivers.

They felt the need for public education with respect to hazardous waste disposal and the best procedures in handling hazardous wastes and in responding to an emergency. In addition, this workshop considered ownership from several viewpoints: the ownership of the transport agency, the ownership of the waste and at what point the ownership (that is responsibility) passes from the generator to the facility.

Long Term Safety and Monitoring

Coordinator: Dr. Frank Labella, Dept. of Pharacology, University of Manitoba
Resource: Carl Orcutt, Environmental Control Services, Manitoba Environment
Attendance: 35

This workshop considered monitoring from several aspects; must we monitor, what do we monitor, how do we monitor, who should monitor and for how long should we monitor.

It was felt that monitoring should deal with all possible areas — biological and physical. The workshop said monitoring should include all existing waste disposal sites and that these sites be included in all legislation. The workshop felt that monitoring should start before facility construction to provide a reliable baseline. This monitoring should also include all workers in hazardous waste management before and during their term of employment. Regulations must include provision for monitoring, clean-up, reporting and public access to all information.

The workshop suggested that provisions be required for long-term monitoring and site security but participants did envision a time when the facility might be safe for occupation (perhaps dependant on the type of facility).

Although day-to-day monitoring by the facility operator was required, a second agency was seen as necessary to check compliance of the operator.

The workshop said there is a necessity for an ongoing public education program pertaining to monitoring, environmental contamination and potential health hazards. In addition it saw a need for a central resource centre to aid in the collection, compilation and dissemination of information pertaining to environmental issues.

Public Participation

Coordinator: Dave Young, Consultant, Hildebrandt-Young and Associates
Resource: Grant McLeod, Environmental Management Services, Manitoba Environment
Attendance: 8

This workshop discussed two basic areas. The process of public participation itself; and, how it could be applied to the hazardous waste management question.

The process of public participation consisted of four components. First, providing all available information to all interested parties at each phase of the facility planning and construction. Second, obtaining the views of all individuals throughout every phase of the siting and construction. Third, publishing the views and responses of all participants in the process. And, fourth, responding to the public input or the public participation process loses its credibility.

The public participation process was seen to be required in all aspects of the hazardous waste management program, but more specifically to six specific areas:

1. Identification of hazardous wastes.
2. The design of a hazardous waste control system.
3. The need for, the ownership of and control of such a system.
4. The design of any facility.
5. The siting of any facility.
6. The operation and management of a waste control system.

Recycling - Reclaiming

Coordinator: Dr. Bill Turnock, Entomologist
Resource: Dave Wotton, Water Standards and Studies, Manitoba Environment
Attendance: 18

The workshop felt that by legislation Manitoba could establish a recycling-reclaiming system for which the operational responsibilities could be borne by the generators and the facilities.

The workshop envisioned on-site recycling for large generators but realized that for small generators on-site storage, staging, collection and transport to a central recycling - reclaiming facility might be required.

The monitoring of the process was seen to be under the authority of the Workplace Safety and Health Act. Both recycled product and the residue were seen to require some form of monitoring.

The workshop saw a need for a technical assistance program which included a waste materials exchange charged with publishing a monthly inventory and a consulting service to the public, generators and recycling facilities on the opportunities, methods and advance in recycling.

The workshop felt that any proposed hazardous waste legislation should discourage the generation and disposal of hazardous wastes through disincentives. Subsidies for transport from small generators and start-up costs for recycling - reclaiming industries, however, might be required.

This workshop saw overregulation as a potential problem in the creation of a recycling-reclaiming industry. They felt the modification of existing legislation would ease some of this strain.

Ownership (Public or Private)

Coordinator: Al Cerilli, Manitoba Federation of Labour
Resource: Edwin Yee, Hazardous Waste Coordinator, Manitoba Environment
Attendance: 7

The ownership workshop divided the question of ownership into three component parts as to who should own the land, the facility and the operational responsibility.

In all components the workshop found in favour of public ownership. They felt that the land should be or should become crown land. They felt that the facility should be a crown corporation responsible to a government agency regarding all aspects of hazardous waste management, legislation and regulation. It was also felt that the operation of the facility should be performed by a crown corporation involving private consultation and expertise.

The workshop saw the need for a user fee concept with the hope that it would encourage recycling, reclaiming and reduction of hazardous wastes. They felt the need for a proportion of the budget to be devoted to research and development, to update and maintain a current information base and to outfit laboratory facilities on-site as well as perhaps off-site.

Alternate Technologies

Coordinator: Dennis Muldrew, Manitoba Naturalists Society
Resource: Larry Strachan, Environmental Control Programs, Manitoba Environment
Attendance: 14

The workshop endorsed the recycling, reclaiming and reduction approach to hazardous waste management. It was felt, however, that as the technology of hazardous waste management changed that the waste streams would also change and therefore it would be necessary to consider all waste streams: gaseous, liquid and solid.

The workshop realized that waste reduction through recycling, reclaiming, non-generation (process change) and treatment of those wastes which cannot be reduced would not completely eliminate the problem. There

would still remain some hazardous wastes or toxic residues requiring some type of disposal. There was, in addition, the problem that for each hazardous waste there would probably be a unique treatment or waste stream thus requiring separate and specific solutions.

The workshop discussed the technologies involved with long term disposal, interim storage and secure landfill of hazardous waste management and realized that, although many options were available, the selection of a particular method and accompanying technology would require more information, study and technical expertise than appears to be presently available.

There was seen a requirement for "cradle to grave" legislation to ensure that knowledge as to the generation, existence, and location of hazardous wastes is available. Without such legislation, there is little guarantee that the alternate technologies will be used.

The over-riding concern of the workshop was the lack of an expertise in both a data base and individuals capable of implementing that information.

Why Hazardous Wastes At All?

Coordinator: Dr. Hymie Gesser, Chemistry Department, University of Manitoba
Resource: Bill Grieve, Technical Services Laboratory, Manitoba Environment
Attendance: 9

This workshop investigated the Reid/Crowther inventory and felt that it indicated that a considerable, but not complete, decrease in the hazardous waste production could be brought about by recycling, reclaiming, reducing or treatment.

This workshop visualized the hazardous waste facility as a laboratory and a series of recovery processes with a minor well-monitored landfill.

There was a call for an education program to change the throw-away mentality of the public and industry. Also, the increase in process changes leading to the production of innocuous wastes.

There was thought to be a need for mobile units such as a rotary kiln for on-site treatment of contaminated soils, for example.

These changes would require initial subsidization but should eventually become self-supporting as financial disincentives become greater.

Secure Landfilling

Coordinator: Doug Keil, P. Eng. Underwood McLellan Ltd.
Resource: Cliff Lee, Solid Waste Management, Manitoba Environment
Attendance: 17

This workshop concluded that in spite of the 3 R's (recycling, reclaiming and reduction) there would be the eventual necessity for a secure landfill for the residues or untreatable wastes.

This workshop identified a need for public education to familiarize the public as to the terms applied in hazardous waste management.

They viewed a landfill as an obligatory eternal structure requiring perpetual care and monitoring. This monitoring should be inclusive of the internal structure of the cell to prevent any environmental leakage. The monitoring was seen to be performed by a second agency independent of the group responsible for the landfill.

Legislation/Regulation/Enforcement

Coordinator: Dr. Barry Webster, Soil Science, University of Manitoba
Resource: Dick Stephens, Programs and Legislation, Manitoba Environment
Attendance: 42

This workshop discussed several areas summarized as follows:

1. A manifest system which encompassed the movement of hazardous wastes from the generator to disposal facility.
2. A discussion as to what constitutes a hazardous waste. It was agreed that processes generating a hazardous waste should be identified and monitored and that the change of the physical state of a hazardous waste would not constitute a change in the hazardous waste.
3. Specific legislation with the involved industries covered: the development of legislation while interacting with the generators; the need to implement monitoring procedures; the operation and practices involved in a disposal facility; the type of facilities which should be allowed; the liability of manufacturers; and, compensation of victims and the reporting of any environmental accidents.
4. The workshop felt that the protection of private citizens required that all jurisdictions be subject to the legislation.
5. Two models of ownership/responsibility of the waste during transport were discussed; the transfer of ownership with the waste generator-hauler-facility and the generator retaining ownership until transfer to the facility was completed.
6. The workshop agreed strongly that there should be no time limit on liability.
7. The final area investigated the problem with ensuring compliance including fines, stop work orders, public and industry education, financial incentives and government assistance of public initiated prosecutions.

Low Level Radioactive Wastes (Ad hoc)

Coordinator: Ken Emberly, Manitoba Environmental Council
Resource: Dennis Brown, Water Standards and Studies, Manitoba Environment
Attendance: 16

After much discussion regarding the interaction of AECL and the public, the workshop made two pertinent recommendations.

The first recommendation was that, as there is a large body of information available as to the behavior of radioactive compounds in long-term storage, it may be applicable to the behavior of hazardous wastes and for this reason should be included in any study.

The second recommendation was that the Manitoba government should cooperate with the federal Low Level Radioactive Waste Management Office to establish a disposal site for the prairie provinces.

4.4
Symposium Evaluation

4.4 Symposium Evaluation

Participants at the Symposium were asked to compete an evaluation questionnaire about the Symposium. A total of 29 evaluations were received which represented a sample of 8% of total peak attendance (345 people at Wednesday, March 16, 1983 speakers' session) or a sample of 14% of the total workshop attendance (214 people).

Generally speaking, the majority of respondents indicated they felt the Symposium was a success and was a good forum for expressing public concerns. More specifically, respondents indicated that: recycling or hazardous wastes should be promoted; more public information should be developed; ongoing public participation in the government program should be encouraged; and, future symposiums should be held in other areas of public concern. It was suggested that the number of workshops be reduced due to an overlap of discussions. It was generally agreed that the basic format of the Symposium be maintained as it was a successful step in the right direction.

5.0
Steering Committee Conclusions and Recommendations

5.0 Steering Committee Conclusions and Recommendations

5.1 Preamble

The following conclusions and recommendations stem from the deliberations of Steering Committee members. Participation and information sharing of committee members before and during the symposium, particularly in the workshops, has allowed us to draw upon the full breadth of the experience. Generally speaking, we are of the belief that there is probably a need for some type of hazardous waste reatment facility although, like the government, we feel there is the need for public confirmation. We are also of the belief that the three R's (reduction, recycling and reclaiming) should be the long-term basis of Manitoba's waste management program.

5.2 Public Information

One of the most common complaints from the participants and from the workshops was the general lack of detailed information on the type and quantity of hazardous wastes in the province. This means that decisions taken to date by the government in the matter of developing a hazardous waste strategy have been made without the benefit of important background information. In addition, this means that the active participation by the public is being solicited without an adequate information base to make them more knowledgable on this important topic as well. It is, however, recognized that the general bibliography on hazardous wastes is being prepared. However, it should be noted that this will be insufficient and inadequate if the bibliography is not accompanied by the actual books, journals and references which it lists. These should be made available at one or two central libraries and the public should have full access to them. It will also be important to maintain this collection in an up-to-date and current fashion. It should be pointed out that the library collection on this topic at the University of Winnipeg, the University of Manitoba, and the Freshwater Institute are insufficient. Also, the AECL library at Pinawa is devoted primarily to nuclear wastes.

Recommendation 1: It is therefore recommended that the government immediately allocate sufficient funds to start building up a waste management library collection.

It became apparent during the symposium that the nature and amounts of hazardous wastes generated in this province are not known with any degree of confidence. One province-wide report by consultants is said to overestimate the magnitude of the waste stream. While the City of Winnipeg has undertaken estimates and inventories of waste materials, it is important that their estimates be evaluated by the province and augmented by additional information from all other parts of the province.

It is therefore the opinion of the Committee that immediate steps be taken to establish a reliable inventory on the amount and source of hazardous wastes generated, stored, and disposed of in the province. A summary report on this study should be made available to the public. The summary report should include comment on the status, location and quantity estimates of hazardous wastes throughout the province. It should also include information on the sources of production, storage, disposal and transportation corridors used. The report should include a determination of the significance of the problem, if any, and provide comment on the consequences of doing nothing about the situation. Specifically, the report should address the question of does the problem exist; is this problem a major one, and environmentally significant; and, what are the consequences of doing nothing about it.

Recommendation 2: It is recommended that the Government of Manitoba undertake studies and prepare reports as described above. They can also be used to facilitate communication between government agencies, municipalities, societies, and other associations having an interest in this particular field. The adoption of a common set of terms and definitions associated with hazardous wastes would also facilitate such communication.

Recommendation 3: It is therefore recommended that the province establish and adopt a common set of terms and definitions on hazardous wastes. These should be published and adhered to in subsequent communications, discussions, and hearings on the subject.

After the above recommendations have been carried out, then the Steering Committee feels that it is then appropriate to begin more fully involving the public with questions concerning the need for a waste management facility, its possible location, construction and operation.

5.3 Public Participation

The Committee recognizes that the government's current intention is to proceed with a set of Clean Environment Commission hearings on the question of whether or not a hazardous waste facility is needed in the province and, if so, what locational criteria would be important in siting the facility. Our Committee is concerned that the discussion on locational criteria may prejudice and colour the question of whether or not there is a need for a facility. We do not have a clear committee consensus that the hearings should be split into two parts, considering first the question of need, and next the question of locational criteria. However, we can only caution the government about proceeding carefully on this matter.

At such time as the need for a hazardous waste facility may be determined and site selection criteria obtained through public hearings, it is the Committee's belief that the public participation component of the program should continue through subsequent phases. Generally speaking, we support the idea of public involvement in the siting, design, construction, operation, and long-term monitoring of a hazardous and special waste facility. More specifically, we recommend the following:

Recommendation 4: Site Selection — After the identification of site selection criteria and the choosing of some five or six potential sites, there will be an environmental impact study on each of the sites with a recommendation on a preferred site. It is recommended that there be public participation through public or private organizations on the site selection committee which sets the terms of reference for the environmental assessment, monitors the findings of the study as it unfolds, and recommends on a preferred site.

Recommendation 5: Design and Construction — Once the site is selected it will still be important to continue public involvement in the design and construction procedures. It is therefore recommended that one or two public or private organizations in addition to one or two members of the municipal council in which the facility is to be constructed work with the government program managers as an advisory board in the design and construction of the facility.

Recommendation 6: Long-Term Operation and Long-Term Monitoring — It is recommended that public input, particularly from the local municipal level, be provided through some mechanism in the long-term operation and monitoring of the facility.

Recommendation 7: It is recommended that public participation be facilitated by making available funding for such purposes. Such funding might include assistance available to public groups to hire professional advice in preparation for representation at public hearings, travelling expenses to assist in coming to meetings, or honoraria to facilitate more formal and longer term involvement.

5.4 Legislation

The committee recognizes that the first drafts of legislation on hazardous wastes have been reviewed by some environmental and public interest groups throughout the province. It is to be introduced into the legislature for first reading during the current session. The Committee cautions the Minister that changes to the legislation may be required as the phases of the waste management program are worked out in detail and as public participation may shape the spirit and intent of the program.

Recommendation 8: The legislation should require the utilization of a trip-ticket form of manifest for the tracking of hazardous waste movements.

Recommendation 9: The definition of hazardous wastes in the legislation should be a broad definition including all waste streams in the gaseous, liquid and solid states.

Recommendation 10: The legislation should specify cradle-to-grave control in addition to prescribing means of later recovery and recycling after disposal.

Recommendation 11: The legislation should require clear labelling and safe handling procedures on all dangerous goods and hazardous wastes and on all vehicles or modes of transport that carry these materials.

Recommendation 12: It is recommended that there be no time limit on liability regarding hazardous wastes contamination and accidents.

5.5 Interim Storage

The Committee recognizes that it may take several years to have a hazardous waste facility open and operating in Manitoba. At the same time, there is a danger that some amounts or kinds of hazardous waste may be lost to the waste stream without chance of recovery unless immediate action is taken. Also, it is recognized that for certain kinds of wastes there may be a critical quantity or mass required, such that transportation, recycling or disposal is viable on a cost effectiveness basis. These two considerations have led to the following recommendation.

Recommendation 13: It is recommended that the Minister give immediate consideration to the development of interim storage facilities or sites to secure hazardous wastes prior to the development of a hazardous waste facility. These interim facilities can later be used for temporary holding areas in order to accummulate a critical mass of material before it is trans-shipped to the central disposal area.

5.6 Organization

Recommendation 14: Crown Corporation. Should a hazardous waste facility be required, it is recommended that it should be built on Crown Land and owned and operated by a Crown Corporation. The Crown Corporation should have as one of its responsibilities the maintaining of a resource centre on hazardous and special wastes which should be open to the public.

When creating such a Crown Corporation the Minister should also give consideration to a revenue structure which incorporates the concept of user fees, a portion of which would be devoted annually to augment research and development in the hazardous waste field.

The Committee has identified three critical issues associated with the hazardous waste facility: long-term community health; the need for government accountability and credibility; and the need to explore the long-term potential economic benefits of Manitoba entering the hazardous waste business. As such, the committee recommends to the Minister that consideration be given to the creation of three satellite organizations associated with the hazardous waste facility.

Recommendation 15: It is recommended that the Minister give consideration to the creation of a CENTRE FOR EPIDEMIOLOGY AND TOXICITY (similar to the centre for occupational health) which would allow members of the public with health concerns to come in and get counselling, educational materials, and diagnostic and treatment services for diseases related to hazardous wastes.

Recommendation 16: It is recommended that the Minister give consideration to the creation of a HAZARDOUS AND SPECIAL WASTE ADVISORY BOARD which would provide ongoing advice to the Crown Corporation. This might work in a similar fashion to the existing Workplace Safety and Health Advisory Board and may possibly act as a unit with the existing Board under some kind of umbrella structure.

Recommendation 17: It is recommended that the Minister give consideration to the creation of a CENTRE FOR ADVANCED TECHNOLOGY IN HAZARDOUS WASTE TREATMENT in Manitoba in order to:

a) Catch up technically in this field;
b) Provide incubator management and funding services to private businesses entering the waste management field;
c) Stimulate research and development in this area.

5.7 Low Level Radioactive Wastes

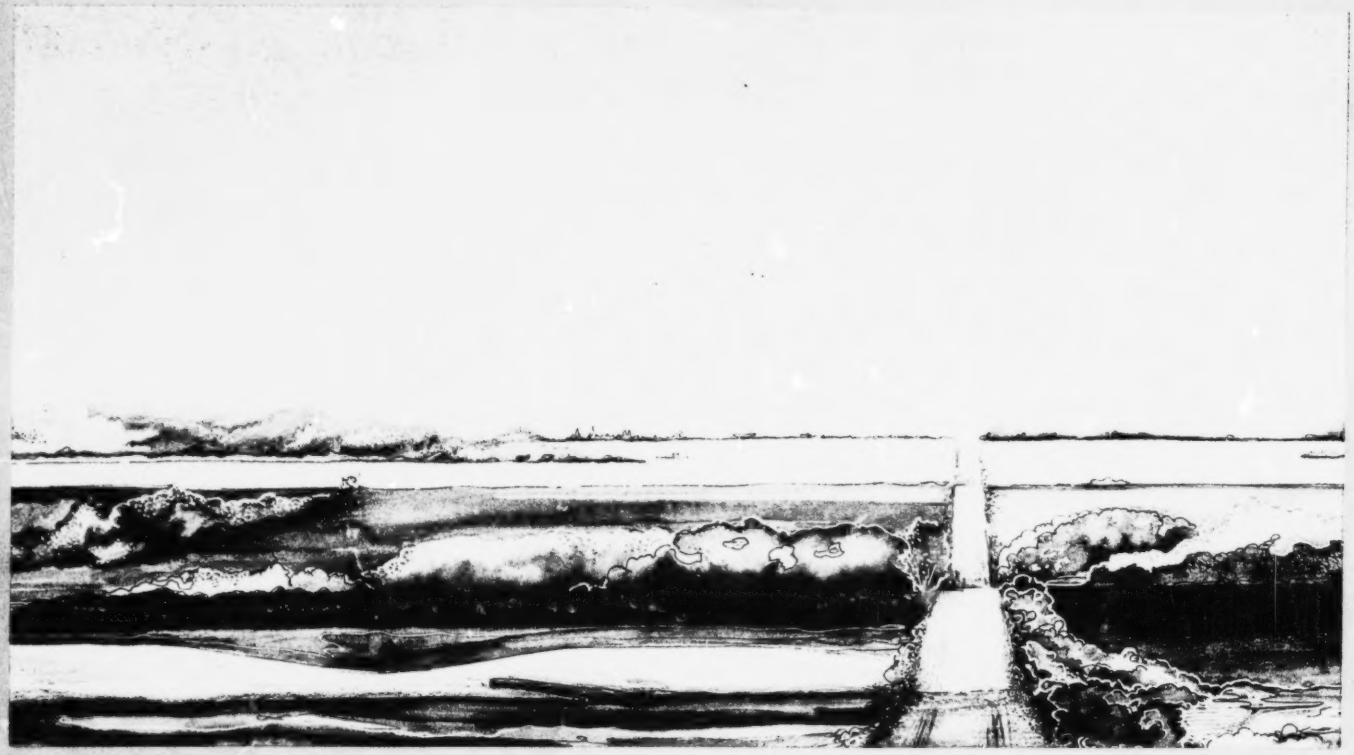
Concern was expressed by several people that the province's hazardous waste program was deficient in excluding the radioactive waste issue. Public pressure at this symposium created the establishment of a special workshop on this subject. The Committee endorses the recommendations flowing from this workshop.

Recommendation 18: It is recommended that the Minister give consideration to co-sponsoring, with the Federal government, a separate and special symposium on the subject of low level radioactive waste.

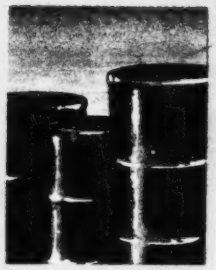
5.8 Government Openness/ Credibility

Many of the conclusions and recommendations noted above relate to the importance of public participation and public education. These were themes that constantly ran through speakers' presentations and through the workshop discussions. To implement meaningful public input in this important area, it is the opinion of the Committee that the Government be open and honest with the general public about hazardous wastes issues, accidents, problems and solutions.

Recommendation 19: It is recommended that the Department of Environment strive even harder to maintain and expand its policy of openness and full disclosure of information.



LOOKING TO THE FUTURE



HAZARDOUS & SPECIAL WASTES

MANITOBA

LOOKING TO THE FUTURE

Every Manitoban wants prosperity. And every Manitoban wants a clean, healthy environment.

Sometimes the two goals appear hard to reconcile. A healthy economy needs industry, but industry generates wastes that may not be healthy for the environment.

These are called hazardous or special wastes, and they could threaten our quality of life.

Fortunately, there are systems in existence to manage these wastes. The Government of Manitoba, through the Department of Environment, is planning a management system to take the hazards out of special wastes.

This booklet defines the problem and introduces some possible solutions. It outlines Manitoba's itinerary for developing the right management system.

Most important, this booklet is to encourage **your** participation. Manitoba is in the planning stage. Every Manitoban has a stake in the solution, so every Manitoban has a right to input. Phone or write with your comments. Or use the postage-free reply card attached to the back cover.

Let's work together to help Manitoba grow in good health.

WHAT ARE HAZARDOUS WASTES?

Hazardous or special wastes are waste substances which because of their nature or quantity are potentially harmful to human health and the environment.

Hazardous wastes are manageable. They can be recyded, stored, treated, or disposed in special landfill sites so that their hazard is eliminated or contained.

In fact, hazardous wastes are everyday things. Most of them derive from familiar processes which provide us with the things we enjoy. Manufacturing and fuel refining produce hazardous wastes, and so do automobiles, farms and even households.

These are some typical wastes that need special management:

- waste oils and solvents from garages, printing and transportation industries;
- acids and alkalis from the petroleum and chemical industries;
- sludges containing heavy metals and chemicals from all manufacturing industries;
- pathological wastes from hospitals and research laboratories;

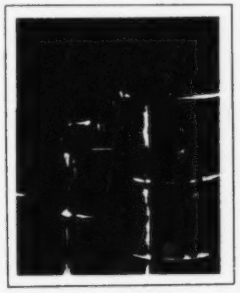
- solvents and oil products from industries and households;
- residues in discarded pesticide containers; and
- banned chemicals, such as polychlorinated biphenyls (PCBs), which are being phased out of use.

Special wastes present hazards in one or more ways. They may be flammable, corrosive, chemically reactive, poisonous, infectious, cancer-causing, genetically disruptive or accumulative in the food chain.

Managing such wastes means eliminating or sharply reducing these hazards. Some wastes can be recycled or reprocessed in useful ways. Others need safe disposal, with or without prior treatment to neutralize their harmful qualities.

We don't know yet how complete a management system Manitoba needs. The Department of Environment is in the process of finding out, which is why we need public involvement.

In the meantime, there are examples of management systems in use elsewhere to use as models.



SYSTEMS IN USE ELSEWHERE

Hazardous waste management has become a part of the economy in some industrialized nations. In Europe, and to a lesser extent in Canada and the United States, special technology to recycle or treat and dispose of hazardous wastes is in use.

Throughout industrial Europe collection stations receive wastes from commercial and private sources. Transportation from the collection stations to the management plants is covered by a reasonable per tonne processing fee.

A typical European plant is jointly owned by government and industry, so that responsibility and costs are shared. Wastes move under manifest between countries for treatment at the appropriate facilities. This co-operation between countries means it is not necessary for every jurisdiction to have its own comprehensive system.

The plants operate like any other industry. In Nyborg, Denmark, for instance, the Kommunekemi facility is like a small chemical plant providing jobs for local residents. Within one kilometre of the plant are a public beach, park, golf course, and quiet residential neighbourhood.

Upon arrival at special waste facilities, wastes undergo chemical analysis before treatment. Some wastes can be safely disposed in secure landfill sites. Many wastes,

such as oils or solvents, are cleaned and recycled. Meanwhile, as awareness of hazards increases, industrial processes are being modified to generate less waste needing special handling.

Some wastes are treated. For instance, acid wastes are used to neutralize alkalines and vice versa. Most organic and many inorganic chemicals are burned in high temperature incinerators with pollution control devices. Poisons are put through chemical reactions that leave them inert and harmless. Evaporation reduces some wastes to easy-to-handle residues. Other wastes can be filtered to remove suspended solids, solidified, or degraded by bacteria.

Secure landfill sites allow safe storage of certain types of wastes for long periods of time. They are specially designed to contain the wastes to prevent environmental contamination.

Care is taken at all times to protect air, water and soil.

These processes represent state-of-the-art technology which can be applied anywhere. Some or all of them could eventually become part of Manitoba's hazardous and special waste management system.

UNCONTROLLED DISPOSAL VS CAREFUL MANAGEMENT

The degree of hazard in special wastes depends on how they are handled. Because the technology exists to control and manage such wastes safely, the hazards could be minimal. On the other hand, if disposal is uncontrolled, the hazards can be quite great.

For the most part available technology has not been put to work in North America. In fact, Manitoba has the opportunity to be among the first jurisdictions in North America to develop an adequate hazardous and special wastes management system. Too often, the problem has got out of hand before anyone acts.

Without a management system, the hazards of special wastes are higher than necessary because of uncontrolled disposal in municipal landfills and elsewhere. Unfortunately, many hazardous wastes right now are treated like everyday garbage because, without special facilities for collection and transport, treatment and disposal, there isn't much alternative.

The Manitoba Environment Department occasionally handles the disposal of a small quantity of wastes for industry, but most companies are left to handle the disposal of their own wastes. In Manitoba's case, some wastes are shipped to the United States or

Eastern Canada for disposal at treatment plants. Small quantities of wastes are stored at the department's interim storage facility, while wastes which can be, are safely disposed in the province by the department.

Homeowners and farmers and many small industries have almost no resources for safe disposal of hazardous wastes.

The present disposal system in Manitoba is adequate for handling only a small amount of our total production. Since the province generates tens of thousands of tonnes of hazardous and special wastes each year, it is evident that Manitoba needs to deal with these wastes to prevent future problems.

The consequences of not dealing with hazardous and special wastes now are great in terms of future environmental quality and human health. So the Manitoba Government has announced and begun a program to plan and develop a management system which will see industry, municipalities, and the province working together co-operatively to keep the environment safe for future generations.

MANITOBA'S PLAN

In November 1982, the Manitoba Government announced a three-phase hazardous and special waste management plan based on open discussion and effective public participation.

The intent of this program is to plan a management system suited to the province's needs. To find out what the province's needs are, the program is devised to get as much input as possible from industry and the public.

Included in the first phase are:

- The Manitoba symposium on Hazardous and Special Wastes. At this symposium, attended by about 400 Manitobans in March 1983, international speakers described problems and solutions experienced in other provinces and countries. Manitobans discussed this information and met in separate workshops to make recommendations. Recommendations from all ten workshops were compiled by a steering committee in a report to the Manitoba government.
- The Hazardous and Special Waste Management Coordinator is touring the province to explain the problem of hazardous wastes and to learn the views of Manitobans.

- The Clean Environment Commission is holding public hearings across Manitoba. The object is to determine the type and the extent of the system Manitoba requires. If a special landfill or treatment facility is seen to be necessary, the hearings will establish criteria for selecting sites. Following the hearings, a report will be presented to the Environment Minister.
- Legislation is introduced into the Manitoba Legislature. The legislation is intended to enable development of a management system including regulations and, if necessary, facilities which will minimize the risks to the environment and human health. The system will integrate the efforts of municipalities and industries with initiatives of the provincial government.

Phase two proceeds, on the basis of information and expert recommendations gleaned in phase one, to plan implementation of a proper management system. Before that stage, Manitobans will have major input as to what the actual components will be.

The planning process means extensive public involvement, especially in any selection of a site for a hazardous waste treatment and disposal facility.

All pertinent factors, including proximity to industrial activity, accessibility to transportation routes and geological and environmental factors would be thoroughly researched and considered during any site selection process.

In phase three, the approved management system will be put in place. Public consultation will continue, with an emphasis on public education to ensure smooth and effective operation of the new system with minimum inconvenience to everyone affected.